How to Host a Family Science Night

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What is it?

A Family Science Night is an evening program of science activities in which elementary school children and their parents can work together on simple, age-appropriate, inquiry-based science activities. All supplies and instructions are provided and families are encouraged to self-select activities and work at their own pace. There are no "experts" and the families are encouraged to better understand the scientific method and enjoy science, rather than memorize scientific concepts. The program uses readily available, low cost materials.

There are two primary goals:
1. Stimulate an excitement and interest in science in elementary school children and their parents
2. To get parents involved in the educational process

Family Science Nights have proven to be very successful at both involving the parents in their children's education and in engaging both parents and students in the fun of science. The program can be utilized at aftercare programs, scout groups, museums, summer camps, community centers, and other science events. Sandia National Laboratories/Lockheed Martin offers the program to about 40 local schools/year as part of our Adventures in Science and Knowledge (Just ASK) outreach program.

Dr. Charles Scaife (formerly of Union College) and his wife Priscilla brought Family Science Nights to Albuquerque, New Mexico. Today, we hope to share the program with you in hopes you can easily replicate our success in your schools.

Pedagogical Rationale

Children perform at higher levels when their parents are involved in their learning (McShane, 1999)
Parents pass on their attitudes along to their children (Gross, 1988; Hurd, 1994)
Women engineers and scientists indicate presence of strong parental support (Campbell, 1992)
Learning is enhanced through guided, scaffolded participation in real-world science activities (Campbell et al., 1989)
Works of Piaget and Vygotsky
NSTA goal of hands on experiences in science learning

Liability Disclaimer

Sandia National Laboratories/Lockheed Martin has made every reasonable effort to phrase instructions carefully in order to point out safety precautions and encourage safe experimental practices and safe us of equipment and supplies. It is the responsibility of those using these instructions to see that parents or adult partners supervise their children carefully and practice reasonable care and common sense in execution of these activities.

Planning

The first step is determining who is going to put on the evening. It is a lot easier if you have a team that can help choose activities, put together the supplies/instructions, advertise, setup and cleanup. In most schools, this is a combined effort of a couple of teachers and some committed parents. If you work closely with other schools in your area, you might consider setting up a co-op and sharing the use of activities.

Next you need to determine a good date. Tuesday, Wednesday or Thursday evenings work best. We recommended scheduling either 6:00-7:30pm or 6:30-8:00pm so that families with young children are home by bedtime. Our activities support 80-100 children and their families. Many large schools choose to limit attendance either by requiring RSVPs or by limiting the evening to one or two grade levels. In most cases, neither is necessary – it just seems to work out. Most evenings are held in the cafeteria and utilize the cafeteria tables. This works great because the families can sit comfortably at the tables, there is a nearby source of water, and any messes can be easily cleaned up.

The next step is to decide what activities to use. We use a set of 16 activities available on our website (english and spanish). This is a good number to provide enough variety and not so many activities that most families don't complete them all. If you are interested in developing other activities, we have provided lots of references. If you are selecting new activities, keeps these things in mind: safety factors, age-appropriateness, space required, ease of obtaining supplies, cost of supplies and ease of packing the supplies.

After selecting your activities, you need to develop a supply list. We have provided a list of materials/supplies for our activities. Most of our supplies are available locally – a few need to be ordered so allow plenty of time to get these. You'll need about 2 activity sheets/station. The activity sheets should include the purpose, instructions, questions to think about, and a short explanation. Big print and colors increase the likelihood of someone reading the instructions! Laminating the instruction sheets is essential if you plan to reuse them.

It is a good idea to try all activities yourself to make sure everything works as planned and that you have all the needed supplies.

After you have purchased your supplies and tested each activity, pack each activity in a separate container. We pack everything (instruction sheets and materials, pencils, data sheets, etc.) in the container. This makes setting up and cleaning up much easier. We use one large additional bin for the newspapers, paper towels and pitchers.

Setting Up

It takes about one hour to setup a Family Science Night and it is easiest if you have 4-5 adults. For 16 activities, we recommend using 8 double-sized cafeteria tables which allows for one activity/4 foot area.

1. Place one bin/table
2. Determine which activities need newspaper covering the tables
3. Fill 2-3 pitchers and your Coke Floats bucket(s) with water
4. Instruct your helpers to get everything out and spread out on the table, store empty bins under the table
5. Place 3-4 large trashcans around the room.
6. Place rolls of paper towels where needed

Conducting the Evening

When people arrive, we invite the families to look around but not to start any of the activities until after the opening. At starting time, we gather the children at the front of the room for a short introduction. Sometimes we begin with a short demonstration to set the tone for the evening. After the demonstration, we conduct a short introduction.

During the next hour, the children and their families go from station to station, performing the activities. We do not use any formal format and we allow families to spend as much time at each station as they need. The only exception is occasionally asking a child to move on from the Invincible Balloon or Making Plastic Station so they don't consume too many of the supplies.

The coordinator's role (1-2 people) is to refill supplies and encourage hesitant families to try the activities. If we are asked questions, we try to raise other questions that will encourage the child and parent to seek their own answer. This is often a great opportunity to suggest they try to answer their question themselves as a science fair project.

Sometimes we offer some kind of formal closing. A closing session provides a good opportunity to discuss which activities were the most fun and what was learned. However, most families leave at different times and it is difficult to get everyone's attention once the event has started. In the absence of a formal closing, near the end of the evening, we begin packing up stations that have either run out of supplies or that are not being used. This gives our guests a gentle reminder that it is time to finish up. Again, it is ideal to have 4-5 adults cleaning up. Instruct your volunteers to keep plastic cups, etc. that you plan to use again if applicable. If you have the bins under the table, clean up is speedy and you should have most of your materials back in the correct bin – ready to restock if necessary.

We have put together a list of ideas for additional experiments to try at home. Feel free to copy ours or come up with some of your own. Our hope is that the learning continues with these easy ideas.

Evaluation

We use a simple evaluation tool to monitor our program. At the end of the evening, we ask parents and children to take a few minutes to complete the survey. This helps us ensure the quality of the program and get feedback on the various activities.

Additional Resources:

Family Science Night Handbook – www.sandia.gov/ASK
Science Night Family Fun from A to Z, Sarquis and Hogue, Terrific Science Press, 2000 (ISBN 1-883822-21-1)
Center for Hands On Learning, www.handsonlearning.org